ORDER

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

6850. 17

10/27/77

SUBJ: MEDIUM-INTENSITY LIGHTING SYSTEM WITH RUNWAY ALIGNMENT INDICATOR LIGHTS

1 PURPOSE. This order directs the use of the following standard drawings and specification FAA-C-2626 to establish the medium-intensity approach lighting system with runway alignment indicator lights (MALSR) **using** components furnished under Contract DOT-FATQWA-3874.

Number	Date	Title
		Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights
D-6137-0		0'-0" to 40'-0" Mounting Height Title
D-6137-1		Typical Plot Layout, Runway Number, Airport Name, City, State
D-6137-2		System Layout and Wiring Diagram
D-6137-3		S-Light Bar, 0'-0" to 6'-0" Maximum Mounting Height; Electrical Details
D-6137-4		Low-Impact Resistance Structure; 6'-0" to 40'-0" Mounting Height, Electrical Details
D-6137-5		40'-0" to 128'-0" Mounting Height, Wiring of Low-Impact Resistance Assembly
D-6137-6		Runway Alignment Indicator Light Sequenced Flasher, 0'-0" to 40'-0" Mounting Height, Electrical Details
D-6137-7		S-Light Bar and Sequenced Flasher; 6'-0" to 40'-0" Mounting Height, Foundations
D-6137-8		Power and Control Station Equipment Details
D-6137-9		Miscellaneous Details

Distribution: WAF/AP-3; WFS/AT/LG/RD-2; RAF/AS/AT/FS-3 (except AEU); NC-1

Initiated By: AAF-560

Number	Date	Title
D-6137-10		Low-Impact Resistance Tower, Structural Erection and Details
D-6137-11		Low-Impact Resistance Tower; 6'-0" to 40'-0" Mounting Height; Light Bar and Mounting Head
D-6027-1	11/3/76	Remote Radio Control, Interface Unit, Electrical Wiring Diagram
D-6027-2	11/3/76	Remote Radio Control, Interface Unit, Assembly Unit

2. DISTRIBUTION. This order is distributed to branch level in Airway Facilities Service and Office of Airports Programs and to division level in Flight Standards, Air Traffic,, Logistics, and Systems Research and Development Services in Washington headquarters; branch level in Airway Facilities, Airports, Air Traffic, and Flight Standards divisions in the regions (except AEU); and to the Director, NAFEC and the Aeronautical Center.

3. BACKGROUND,, Drawings D-6137-0 through D-6137-11, and D-6027-1 through D-6027-2 are issued to provide the proper installation of MALSR equipment manufactured by Connecticut International Corporation (Sepco Division) under Contract DOT-FATQWA-3874 for MALSR frangible system mounting height of 0 to 128'-0". Tower structures of 6' to 40' will be procured by the regions, using FAA Specification FAA-E-2604. For tower structures 40' and above, new systems performance requirements are being developed.

4 APPLICATION. Drawing D-6137-0 is a typical title sheet for project drawings. Drawing D-6137-1 shows the typical site layout plan and profile for a MALSR system. This drawing is to be used as a guide and checklist for information that is required on the project site layout drawings. The access road and turnaround, which shall be constructed in accordance with access road drawings D-5980-1 and -2, are optional and should be site-determined by regional requirements. Actual siting of the system shall be in accordance with Order 6850.2, Visual Guidance Lighting Systems. Drawings D-6137-2 through -11 have been developed as standard construction and electrical installation drawings for the MALSR lighting system with low-impact resistance supporting structure as specified in Specification FAA-E-2604 and installed in accordance with Specification FAA-C-2626. Foundation designs for the five-lamp bars, sequenced flashers, and power control station supports are based on a minimum safe soil-bearing pressure of 3,000 psf and lateral soil pressure of 200 psf per foot of depth below grade-for applied loading

conditions tabulated on Drawing D-6137-7. Depth of foundation footings shall be as shown on drawings or 'one foot below local frost depth, whichever is greater, The local frost-depth shall be noted on the project site plan. Where the actual site soil-bearing strength is less than 3,000 psf and/or the local frost depth is greater than 5'-0", the foundation designs as shown on the drawings shall be modified as required to suit existing soil conditions. Power source configurations are site-determined, therefore, the most economical service extension shall be set forth on the project site layout and an appropriate service extension detailed drawing developed. The plastic duct installation detailed on Drawing D-6137-9 shall be used only in those areas where it is necessary to protect the cable from possible animal or insect damage. These drawings shall be used for all future establishment, relocation, and current construction projects for the equipment identified in paragraph 1. Inquiries or comments regarding these drawings shall be directed to the Chief, Environmental Systems, AAF-500, Airway Facilities Service.

5. REMOTE HEAD FLASHER,, The sequenced flashers supplied by Contract DOT-FATQWA-3874 have a remote flasher head separate from the power supply, and installation instructions are contained in the equipment. instruction book,

6 REMOTE CONTROL. There are three remote radio control configurations for controlling a MALSR system, depending on the type of air traffic control facilities: ground-ground and air-ground combination system, ground-ground system, and air-ground system. The remote control equipment is supplied directly to the site by the Washington office with frequency pretuned by the manufacturer.

a. The combination radio control system allows remote control of the MALSR from the airport traffic control tower (ATCT) or flight service station (FSS) over a frequency modulated (fm) radio link. When the ATCT or FSS is not operating, the control is switched to an amplitude modulated (am) receiver to be operated by the aircraft pilot. The combination system is installed either at a part-time ATCT or at a part-time FSS when there is no ATCT on the airport,,

(1) The ground-ground and air-ground combination radio control system is composed of the following equipment:

(a) One fm transmitter installed at the ATCT or FSS.
(b) One manual control console with 96 function capability installed at the control point in ATCT or FSS.
(c) One antenna for the fm transmitter installed on the roof of the ATCT or FSS. Use another location if intermode interference is experienced,,

(d) One fm receiver and decoder installed at the MALSR power and control panel.

(e) One antenna for fm receiver installed at the MALSR power and control panel.

(f) One interface unit installed between the fm receiver-decoder and/or the air-ground receiver-controller, and the MALSR power and control panel.

(g) One am receiver-controller installed at the MALSR power and control panel.

(2) The installation of ground-ground and air-ground combination radio control system requires testing after completion or during the work, The testing to be conducted by the contractor is described in Specification FAA-C-2626, Division 11. The FAA shall test and tune up, as described in AF P 6910.3, Change 90, Chapter 67, paragraph 15f, g, h, i, and j. These procedures were written for lighting systems procured under another contract but are applicable to this equipment.

b. The ground-ground radio control system allows remote control of the MALSR from only the ATCT or FSS over an fm radio link. The ground-ground system is installed either at a full-time ATCT or at a full-time FSS when there is no ATCT on the airport

(1) The ground-ground radio control system is composed of the equipment described in paragraph 6a (1) (a) , (b), (c), (d), (e) , and (f) above,

(2) The installation of ground-ground radio control system requires testing after completion or during the work, The testing to be conducted by the contractor is described in Specification FAA-C-2626, Division 11. The FAA shall test and tune up as described in AF P 6910.3, Change 76, Chapter 66, paragraph 15e, f, and g. These procedures were written for lighting systems procured under another contract but are applicable to this equipment.

c. The air-ground radio control system allows remote control of MALSR through an am receiver-controller by the aircraft pilot. The air-ground system is installed at locations having no air traffic control operation. The air-ground radio control system has two control functions with expansion capability to a three-function system.

(1) The air-ground radio control system is composed of the equipment described in paragraphs 6a(1)(f) and (g).

(2) The installation of air-ground radio control system requires testing after completion or during the work, The testing to be conducted by the contractor is described in Specification FAA-C-2626, Division 11. The FAA shall test and tune up as described in AF P 6910.3, Change 83, Chapter 62, paragraphs 15c and d. These procedures were written for lighting systems procured under another contract but are applicable to this equipment.

7. FREQUENCY ASSIGNMENT. Each application for a frequency authorization shall be coordinated by FAA regional and Washington office frequency managers on a case-by-case basis prior to making an operational assignment.

a. The frequency assignments for the transmitters/receivers used in the ground-ground remote radio control application shall be from 162-174 MHz, fm with lo-watt output, short-range, low-use (less than one percent of the time). Technical standards for operations in the 162-174 MHz band are found in paragraph 5.4.7 of the Office of Telecommunication Policy, Manual of Regulations and Procedures for Radio Frequency Management. Authorized emissions are 16F2 and 16F3.

b The region may obtain authorization to use the ATCT local control frequency for air-ground controlof airport lights during hours when the ATCT is shutdown. Similar authorization may be obtained for air-ground control on FSS frequencies at non-ATCT airports.

c. At non-ATCT/non-FSS airports, authorization may be obtained for air-ground control on frequencies in the band from 121.95 to 123.05 MHz.

d Air-ground control is not recommended on ground control frequencies. However, ATCT to airport lighting control point assignments may be obtained on these frequencies.

8 AIR TRAFFIC INTERFACE. The installation of the remote radio control console in the ATCT or FSS shall be coordinated with the Air Traffic divisions in the regions.

9 FLIGHT STANDARDS INTERFACE. The MALSR system shall be flight inspected to assure that the remote radio controls perform satisfactorily; this includes the ground-ground and/or air-ground remote radio control system.

10. DEVIATION FROM STANDARD. No deviation from the standard is authorized without the prior approval of the Director, Airway Facilities Service. Parking lots, access roads, and similar details are authorized without further clearance. Dimensional errors, discrepancies, or suggestions for modification or addition of details should be brought to the attention of Chief, Environmental Systems Division, AAF-500.

11 CORRECTIONS TO STANDARD. Corrections to the standard may be made by the Director, Airway Facilities Service, without further regional or inter-service coordination. These may include corrections of dimensional errors, misspellings, and modification, addition, or deletion of details.

12 DISTRIBUTION OF DRAWINGS. A reproducible copy of each drawing is being forwarded to NAFEC; each region (except AEU); Attention: Airway Facilities Division; and two copies of each drawing to the Aeronautical Center, Attention: Chief, FAA Depot. Additional copies may be obtained from the Environmental Systems Division, Airway Facilities Service, Attention: AAF-510.

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